

Black-white-red pots and one red pressed-decorated vessel; *Graves 10 and 12* yielded the only other 2 red pressed-decorated ollas in the entire collection. There are, then, some grounds for supposing the red pressed-decorated and Black-white-red graves to be slightly earlier than the black ware graves, one of which has a near-typical Chimú stirrup-mouth jar. In the face of the data from Huaca de la Cruz and Taitacantin this slim evidence for a separation is worth only passing consideration. If at all valid its real importance may be to keynote the fact of the transition which was undoubtedly taking place. This transition of ceramic styles, the gradual disappearance of the Black-white-red and the red or oxidized wares and their replacement by the Chimú forms and black or reduced wares, characterized the Virú Valley in the Middle Period.

Consistent with this interpretation has been the surface survey study of ceramics conducted in Virú as a part of the Institute of Andean Research program by James A. Ford. Ford has found the shift from the Black-white-red or upper Middle Period into Late Period Chimú to be one of gradually changing percentage frequencies in pottery styles, not a major ceramic break.

## LITERATURE CITED

- BENNETT, WENDELL C. *Archaeology of the north coast of Peru, an account of exploration and excavation in Virú and Lambayeque Valleys*. *Anthrop. Pap. Amer. Mus. Nat. Hist.* 37 (pt. 1): 1939.
- KROEBER, A. L. *Archaeological explorations in Peru, Part I, Ancient pottery from Trujillo*. *Anthrop. Mem. Field Mus. Nat. Hist.* 2(1). 1926.
- . *Archaeological explorations in Peru, Part II, The northern coast*. *Anthrop. Mem. Field Mus. Nat. Hist.* 2(2). 1930.

ZOOLOGY.—*Further notes on the amphipod genus Corophium from the east coast of America*.<sup>1</sup> CLARENCE R. SHOEMAKER, associate in zoology, U. S. National Museum.

Since the publication of my paper *The amphipod genus Corophium on the east coast of America* (*Proc. Biol. Soc. Washington* 47: 23-32. 1934), additional records have extended the range of several of the species, a new species has been described from Florida, and the female of *C. louisianum* has been discovered. I am giving detailed figures of the species so far recorded from the east coast of America, several of which have not been figured heretofore, and also a description of the female of *C. louisianum*.

In his paper *A review of the amphipod genus Corophium with notes on the British species* (*Journ. Marine Biol. Assoc.* 21 (2): 589-630. 1937), G. I. Crawford has given extensive references to the literature under the respective species. I am, therefore, giving only brief references to the literature of those species common to both Europe and America. I am following Crawford in his convenient division of the genus *Corophium*

into three sections. The species of the east coast of America fall into these divisions as follows:

## SECTION A: Segments of urosome separate.

1. Antenna 2, segment 4, different in ♂ and ♀  
..... *C. rioplatense*, p. 48
2. Antenna 2, segment 4, alike in ♂ and ♀  
..... *C. volutator*, p. 51

## SECTION B: Segments of urosome fused; uropods 1 and 2 inserted in notches in the lateral margins.

1. Antenna 2, segment 4, different in ♂ and ♀  
..... *C. acherusicum*, p. 53  
..... *C. crassicorne*, p. 53  
..... *C. tuberculatum*, p. 53  
..... *C. insidiosum*, p. 53  
..... *C. ellisi*, p. 59  
♂ unknown.... *C. bonelli*, p. 59
2. Antenna 2, segment 4, alike in ♂ and ♀  
..... no species

## SECTION C: Segments of urosome fused; uropods 1 and 2 attached ventrally; lateral margins of urosome without notches.

1. Antenna 2, segment 4, different in ♂ and ♀  
..... *C. acutum*, p. 59  
..... *C. lacustre*, p. 59  
..... *C. louisianum*, p. 63
2. Antenna 2, segment 4, alike in ♂ and ♀  
..... *C. simile*, p. 63

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**Corophium rioplatense** Giambiagi

Fig. 1, a-j

*Corophium rioplatense* Giambiagi, Anal. Mus. Nac. Hist. Nat. Buenos Aires 34: 138, figs. 1-3. 1926.

*Corophium rioplatense* Shoemaker, Proc. Washington Biol. Soc. 34: 27. 1934.

*Corophium rioplatense* Crawford, Journ. Marine Biol. Assoc. 21 (2): 605. 1937.

*C. rioplatense* was described from the Río de la Plata in 1926 and has not been recorded elsewhere. Senora Giambiagi has kindly sent me a mature male and female, cotypes of her species, from which the accompanying figures were drawn.

*Male*.—Head without rostrum; lateral lobes short and rounding. The eyes of the specimens examined were rather indistinct, but this is probably due to their state of preservation. Antenna 1 reaching almost to the middle of the fifth joint of antenna 2; first joint without proximal spines on inner margin, but with a number of long, forward-curving setae, lower margin with a single forward-pointing distal spine; flagellum consisting of six or seven joints. Antenna 2, fourth joint with lower margin produced distally into a curved tooth above which is a smaller tooth, fifth joint with a small blunt tooth on lower proximal margin, lower margins of fourth and fifth joints and flagellum furnished with tufts of very long setae.

Mandibular palp, first joint not produced distally, but apically rounding with the plumose seta attached somewhat submarginally; second joint longer than the first and bearing the usual plumose seta beside which is a shorter seta. Gnathopod 1, palm evenly convex, without defining angle, armed on inside surface with four or five slender spines and with several longer spines where the palm passes into the lower margin of the joint, entire palm very finely denticulate; seventh joint with inner margin bearing a distal tooth behind which are very fine denticulations. Gnathopod 2, seventh joint bearing two teeth on inner margin.

Uropod 1, peduncle with three stout spines on outer lateral margin followed proximally by a slender spine, and there appears to be a small spine at the distal angle, inner margin with a small distal spine; the lower distal margin of peduncle produced into a long triangular process with rounding apex; outer ramus with four spines on outer margin, and the usual group of

distal spines, inner margin without spines; inner ramus bearing the same spination as outer ramus. Uropod 2, peduncle without spines; rami with distal spines and each ramus with a single spine on outer lateral margin, but none on inner margins. Uropod 3, ramus longer than peduncle. Telson wider than long. Length of the male examined about 3 mm from front of head to end of uropods.

*Female*.—The female differs from the male principally in antenna 2. Antenna 1 reaching to the distal end of the fifth joint of antenna 2; first joint armed with one spine at the proximal end of the inner margin (Giambiagi's figure shows two spines), lower margin bearing a single distal spine as in male; flagellum consisting of about seven joints. Antenna 2, short and stout; fourth joint with lower margin produced distally into a thin angular lobe bearing a distal spine above which are three smaller spines; five spines borne on low protuberances on inner surface of lower margin; and two spines on inner surface, one near the distal edge of joint and the other about the middle; fifth joint with a low triangular protuberance bearing a spine situated near the middle of the lower margin, and a smaller protuberance near the proximal end of lower margin. Head without rostrum; lateral lobes short and rounding. Mandibular palp as in male, but with a single plumose seta at the apex of the second joint. Gnathopod 1 as in male, but bearing about seven submarginal spines on inside edge of palm. Gnathopod 2 like that of male. The uropods of the female are partially missing, and the third uropods lack the rami. The first uropod on the right side is present and appears to be uninjured. The peduncle of this uropod bears no spines, but has three long, slender setae on the outer lateral margin, and the lobe or projection at the lower distal end is sharply triangular; the spine-arrangement of the rami is about the same as in the male. In Giambiagi's figure (3, Ur. 3 ♀) of uropod 3 of the female the ramus is equal in length to the peduncle.

The fifth peraeopods are lacking on both the male and female at my disposal, but, according to Giambiagi's drawing (fig. 3, p. 7), the second joint of this peraeopod, at least in the male, is very narrow and not at all expanded. The female measures about 4 mm from the front of the head to the end of the uropods.

The female here figured has fully developed marsupial plates and appears to be fully mature, but the male is smaller and may not have reached its maximum size.

**Corophium species**

Dr. Leonard P. Schultz, in 1942, collected a number of specimens of *Corophium* in brackish water in Ciénaga del Guanavana (swamp), 10

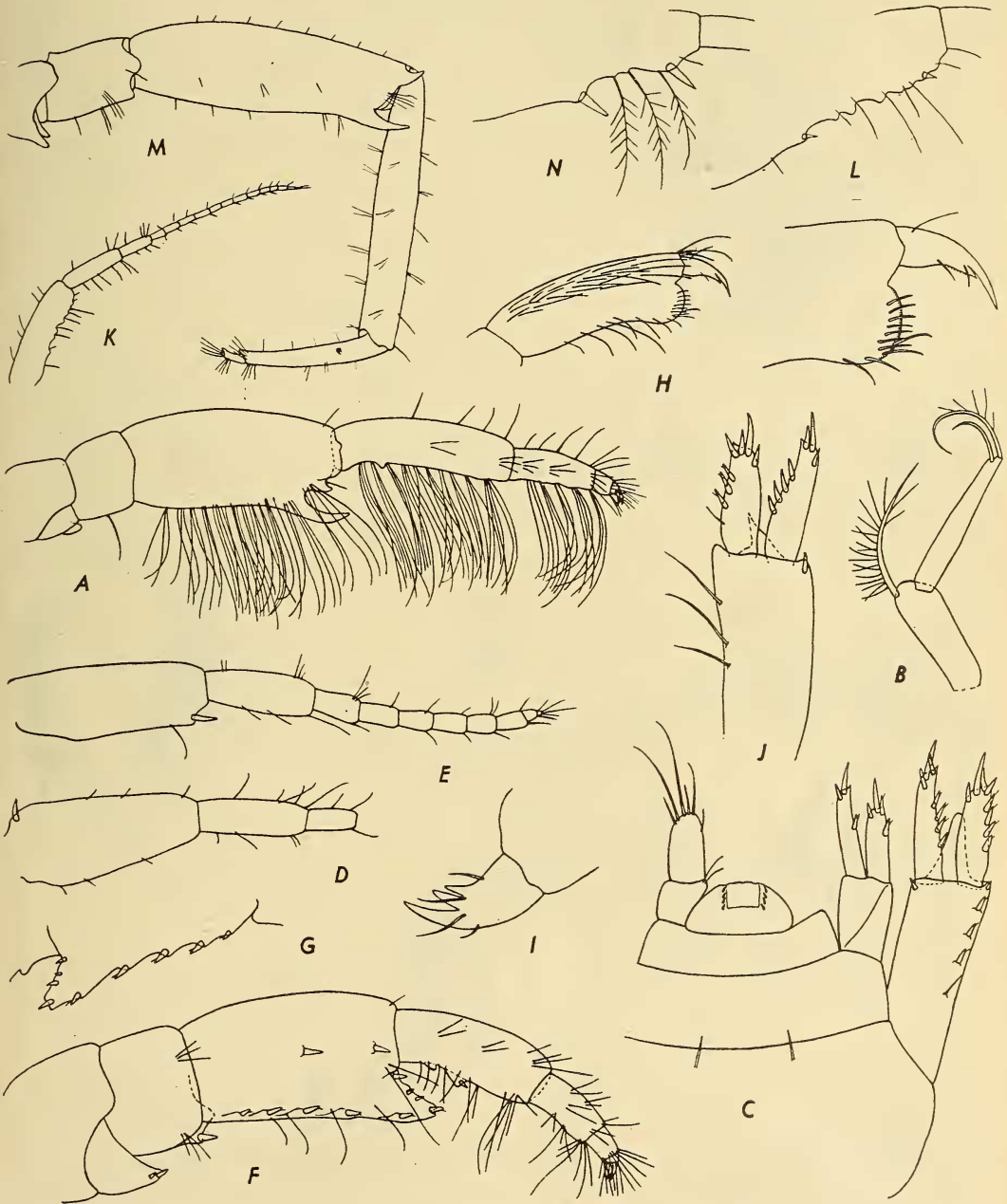


FIG. 1.—*Corophium rioplatense* Giambiagi, male: a, antenna 2; b, mandibular palp; c, urosome and appendages; female: d, antenna 1, top view; e, antenna 1, side view; f, left antenna 2, inside view; g, lower margin of fourth joint of antenna 2, tilted to show protuberances and spines; h, gnathopod 1; i, end of gnathopod 2; j, right uropod 1. *Corophium volutator* Pallas, male: k, antenna 1; l, antenna 1, lower margin or first joint; m, left antenna 2, inside view; female: n, antenna 1, lower margin of first joint.

km north of Sinnamaica, Venezuela. These specimens were dried out, but after soaking in warm water they show many characters possessed by *C. rioplatense*. Without fresh material

from Ciénaga del Guanavana, and a series of *C. rioplatense* showing growth characters, I do not feel justified in identifying this Venezuelan material as *C. rioplatense*.

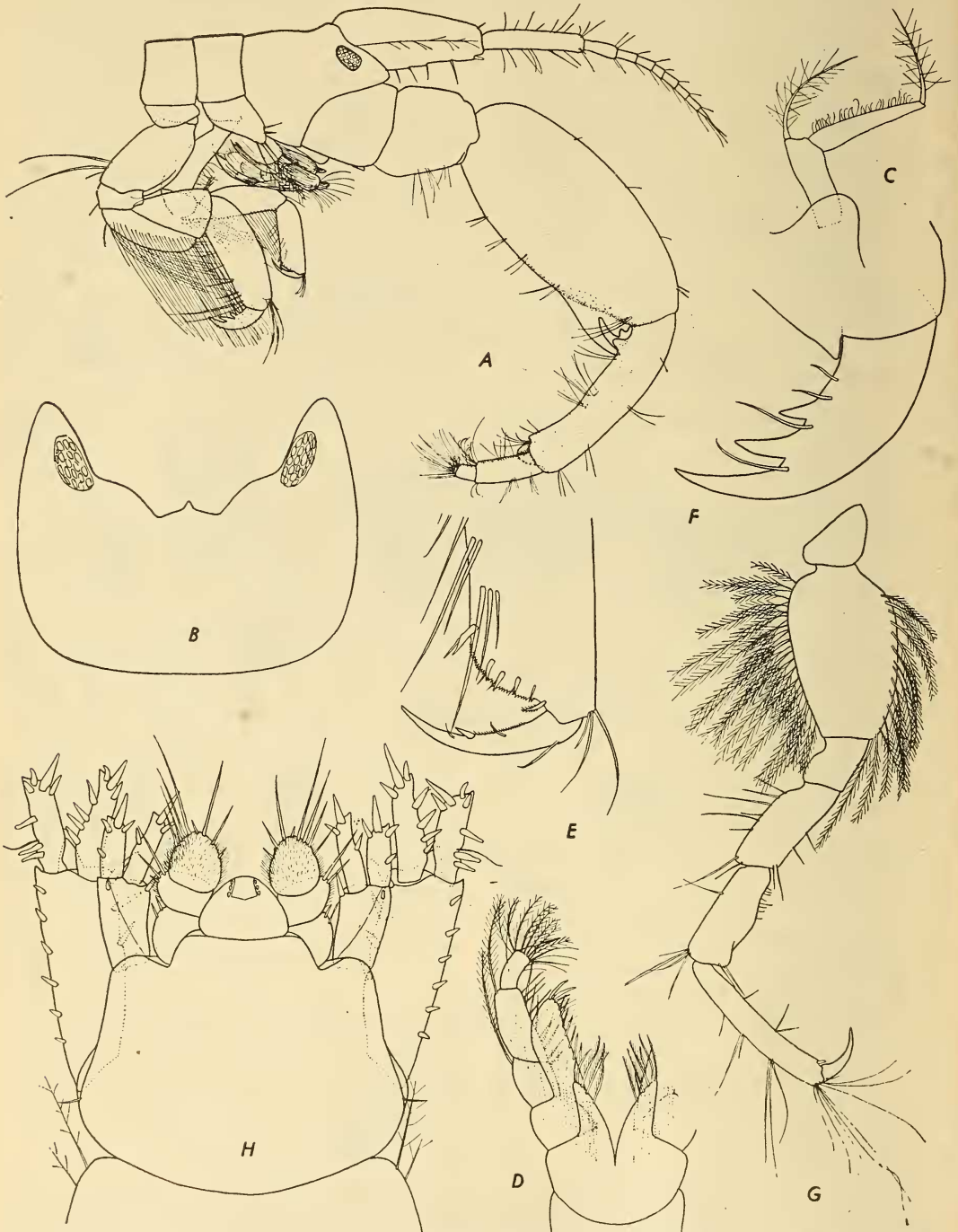


FIG. 2.—*Corophium acherusicum* Costa, male: a, anterior part of animal; b, head from above; c, mandibular palp; d, maxilliped; e, gnathopod 1; f, seventh joint of gnathopod 2; g, pereopod 5; h, urosome and appendages.

The characters of the male agree with those of the male of *C. rioplatense*; it is without rostrum and uropod 1 possesses the long spatulate distal lobe. In the female young specimens bear four spines beside the distal spine on the lower margin of the fourth joint of antenna 2; in older females there are three spines in addition to the distal spine on the lower margin and two spines on the inner surface of the fourth joint, as shown for *C. rioplatense* (fig. 1, *f*). On the upper margin of the distal lobe of this fourth joint are one or more small spines; the fifth joint has a protuberance armed with a spine in the middle of the lower margin as in *C. rioplatense*. The inner margin of the first joint of antenna 1 bears three proximal spines and the lower margin bears four or five spines. Giambiagi does not mention the number of spines on the lower margin of this joint, but in the female that I have studied there is only a distal spine, as I have shown in Fig. 1, *e*. Gnathopods 1 and 2 are like those of *C. rioplatense*. Uropod 1 of the female has the sharply triangular lobe as in *C. rioplatense*. Length of female from front of head to end of uropods 3.5 to 4 mm. The male is smaller.

**Corophium volutator** (Pallas)Fig. 1, *k-n*

*Oniscus volutator* Pallas, *Miscellanea Zoologica*: 192, pl. 14, fig. 20. 1766.

*Corophium grossipes* Sars, *Crust. Norway* 1: 614, pl. 219. 1894.

*Corophium volutator* Blake, in Procter, *Biol. Survey Mount Desert Region*, pt. 5: 255. 1933.

*Corophium volutator* Shoemaker, *Proc. Biol. Soc. Washington* 47: 23. 1934.

*Corophium volutator* Crawford, *Journ. Marine Biol. Assoc.* 21 (2): 595. 1937.

*C. volutator* is much more widely distributed in Europe than it is in America, where it has been recorded only from the Bay of Fundy and the coast of Maine. It is a large species, about 6 mm in length and is the type species of the genus. I have figured the antennae of the male and the first joint of the first antenna of the female. The second antenna of the female, though smaller, resembles that of the male, having the curved tooth at the lower distal corner of the fourth joint, but not the inward-curving tooth at the upper distal corner. Crawford (1937, p. 596) says of *C. volutator*, "... forming tubes intertidally in the mud of estuarine mud-flats, salt-marsh pools, and brackish

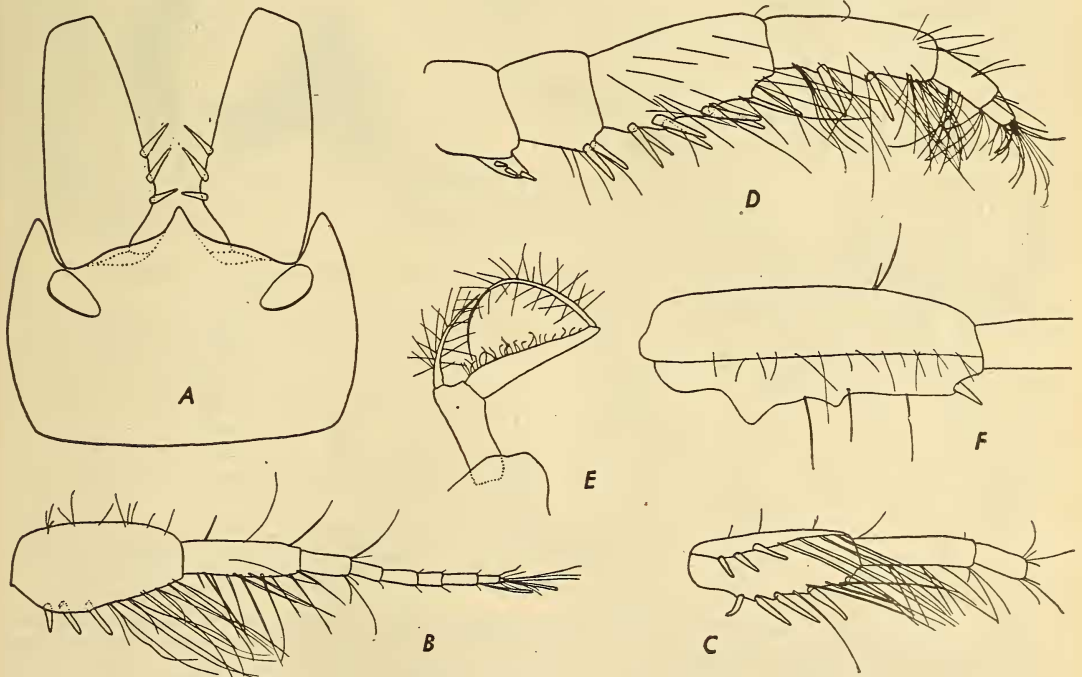


FIG. 3.—*Corophium acherusicum* Costa, female: *a*, head and first antennae from above; *b*, left antenna 1 from above; *c*, left antenna 1 showing spines on lower margin; *d*, left antenna 2; *e*, mandibular palp; male; *f*, left antenna 1 showing spine and protuberances on lower margin.

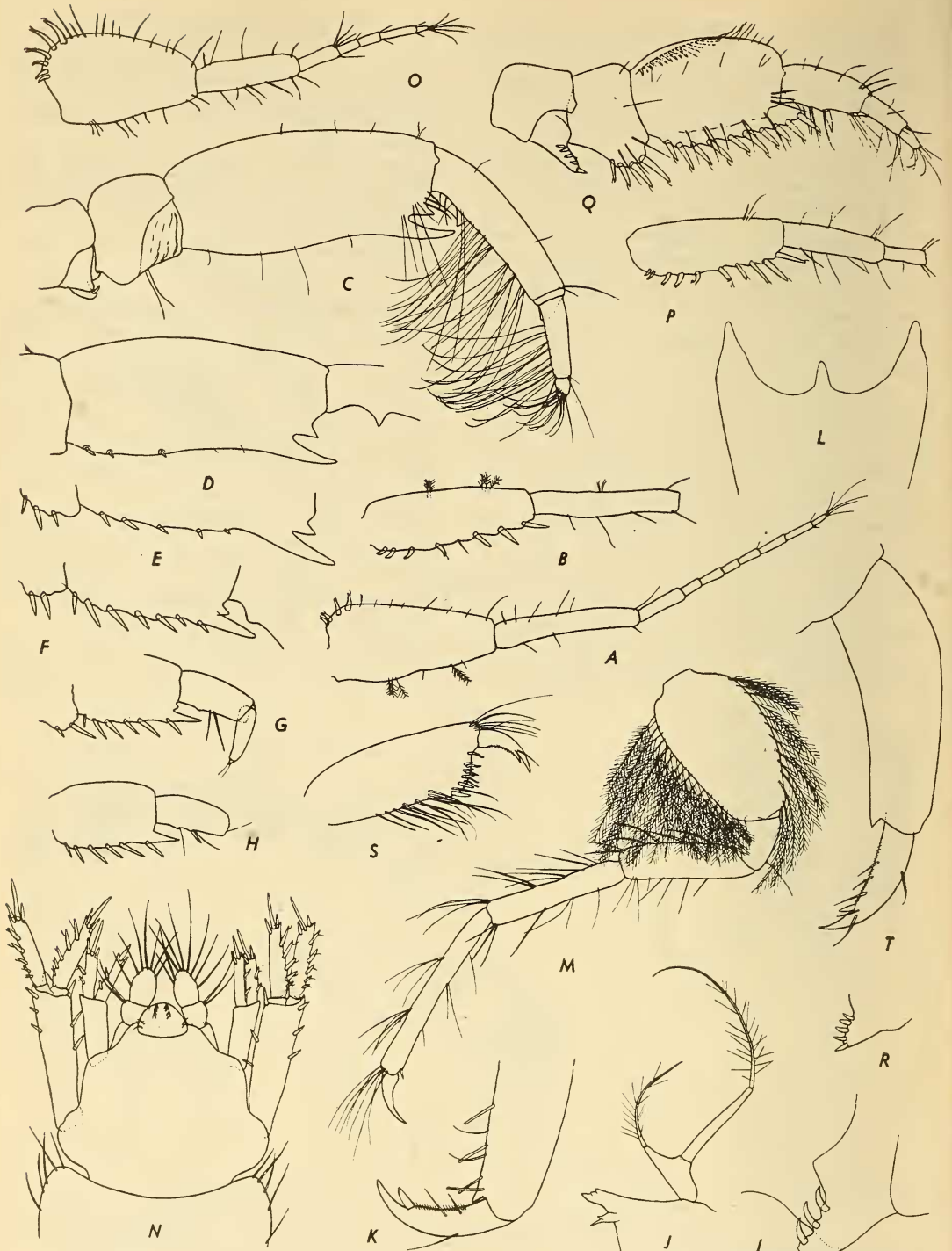


FIG. 4.—*Corophium crassicorne* Bruzelius, male: *a*, right antenna 1, top view; *b*, antenna 1, side view; *c*, antenna 2, side view; *d*, antenna 2 showing small spines on inner surface of lower margin; *e-h*, antenna 2 showing successively younger stages; *i*, gland cone of antenna 2; *j*, mandible; *k*, gnathopod 2; *l*, top of head showing rostrum and lateral lobes; *m*, peraeopod 5; *n*, urosome and appendages; female: *o*, right antenna 1, top view; *p*, antenna 1, side view; *q*, antenna 2, side view; *r*, gland cone, inside view; *s*, gnathopod 1; *t*, gnathopod 2.

ditches. In some of the streams running into the Tamar it lives in almost fresh water associated with a number of insect larvae. In many of its localities, however, the water is nearly of full salinity." The specimens here figured were taken in the Shubenacadie River at Urbana, Nova Scotia, by the Biological Board of Canada.

### *Corophium acherusicum* Costa

Figs. 2, 3

*Corophium acherusicum* Costa, Mem. Accad. Sci. Napoli 1: 232. 1857.

*Corophium acherusicum* Shoemaker, Proc. Biol. Soc. Washington 47: 24. 1934.

*Corophium acherusicum* Crawford, Journ. Marine Biol. Assoc. 21 (2): 617, fig. 2, P. 1937.

Specimens in the national collection which were formerly identified as *Corophium cylindricum* Say have proved to be the same species as *C. acherusicum* Costa, which has a wide distribution both in the Eastern and Western Hemispheres.

Crawford gives as the distribution: Southern England; coasts of France and Holland; Mediterranean; northern coast of Africa from the Suez Canal to Senegal; Durban Bay; Dar-es-Salaam; and Lyttleton Harbor, New Zealand. In the National Museum there are specimens from the east coast of America from Baffin's Bay to Brazil; and from the west coast from Alaska, Vancouver Island, and California (Monterey Bay, San Francisco Bay, and Newport Bay); also from Oahu, Hawaiian Islands, and from a ship's bottom at Hong Kong.

### *Corophium crassicornae* Bruzelius

Fig. 4

*Corophium crassicornae* Bruzelius, Kongl. Svenska Vet.-Akad. Handl. Stockholm (n. ser.) 3 (1): 15, pl. 1, fig. 2. 1859.

*Corophium crassicornae* Sars, Crust. Norway 1: 615, pl. 220. 1894.

*Corophium crassicornae* Stebbing, Das Tierreich, Amphipoda. I Gammaridea: 690, figs. 116-118. 1906.

*Corophium crassicornae* Blake, in Procter, Survey Mount Desert Region, pt. 5: 255. 1933.

*Corophium crassicornae* Shoemaker, Proc. Biol. Soc. Washington 47: 24. 1934.

*Corophium crassicornae* Crawford, Journ. Marine Biol. Assoc. 21 (2): 607, figs. 4 a-f. 1937.

Dr. K. Stephensen (*The Tanaidacea and Amphipoda of the Arctic*, Fauna Arctica, 1932, p. 372) gives as the distribution of this species,

"From southern Spitzbergen and Barents Sea to Black Sea; Jan Mayen (not Greenland and Iceland)." In 1933 Blake recorded it from Mount Desert Island, Maine. In 1934 I extended the range on the east coast of North America from Bay of Fundy to Gardiners Bay, Long Island, New York. Two fully developed females collected by Dr. Wm. H. Dall at Chichagof Harbor, Attu, Alaska, June 20, 1873, are undoubtedly this species. I can find no published records of the extension of the range of *C. crassicornae* since 1934. A. O. Walker in 1904 recorded the species from Ceylon. Dr. Chas. Chilton in 1921 recorded it from Chilka Lake and New Zealand, and said that he also had specimens from Port Jackson, New South Wales. In 1925 Dr. Chilton recorded it from Talé Sap, India. It is now thought that these specimens recorded by Walker and Chilton should be referred to *C. triaenonyx* described by T. R. R. Stebbing in 1904 from Ceylon (*Spolia Zeylanica* 2, pt. 5; 25, pl. 6a), as this species has several characters resembling those of *C. crassicornae*.

### *Corophium tuberculatum* Shoemaker

Fig. 5

*Corophium tuberculatum* Shoemaker, Proc. Biol. Soc. Washington, 47: 29. 1934.

*Corophium tuberculatum* Crawford, Journ. Marine Biol. Assoc. 21 (2): 623. 1937.

Since the description of this species in 1934, very fine additional specimens have been received at the National Museum, which extend the range considerably southward. *Corophium tuberculatum* is at present represented by specimens from Woods Hole, Mass.; Amityville, Long Island, N. Y.; Mispitton Cove, Delaware Bay, Del.; many specimens from Chesapeake Bay, taken by the steamer *Fish Hawk*; off Bogue Inlet, N. C. (*Fish Hawk* station 8286); Edisto Island, S. C. (taken by T. K. Ellis); Fernandina, Fla. (taken by Andrew Pizzini); Sarasota Bay, Fla. (taken by M. W. Williams); and Deer Island, off Biloxi, Miss. (taken by M. W. Williams).

This species appears to prefer the waters of bays and estuaries, and it has not been recorded outside the east coast of the United States.

### *Corophium insidiosum* Crawford

Figs. 6, 7

*Corophium insidiosum* Crawford, Journ. Marine Biol. Assoc. 21 (2): 615. fig. 2 a-g. 1937.

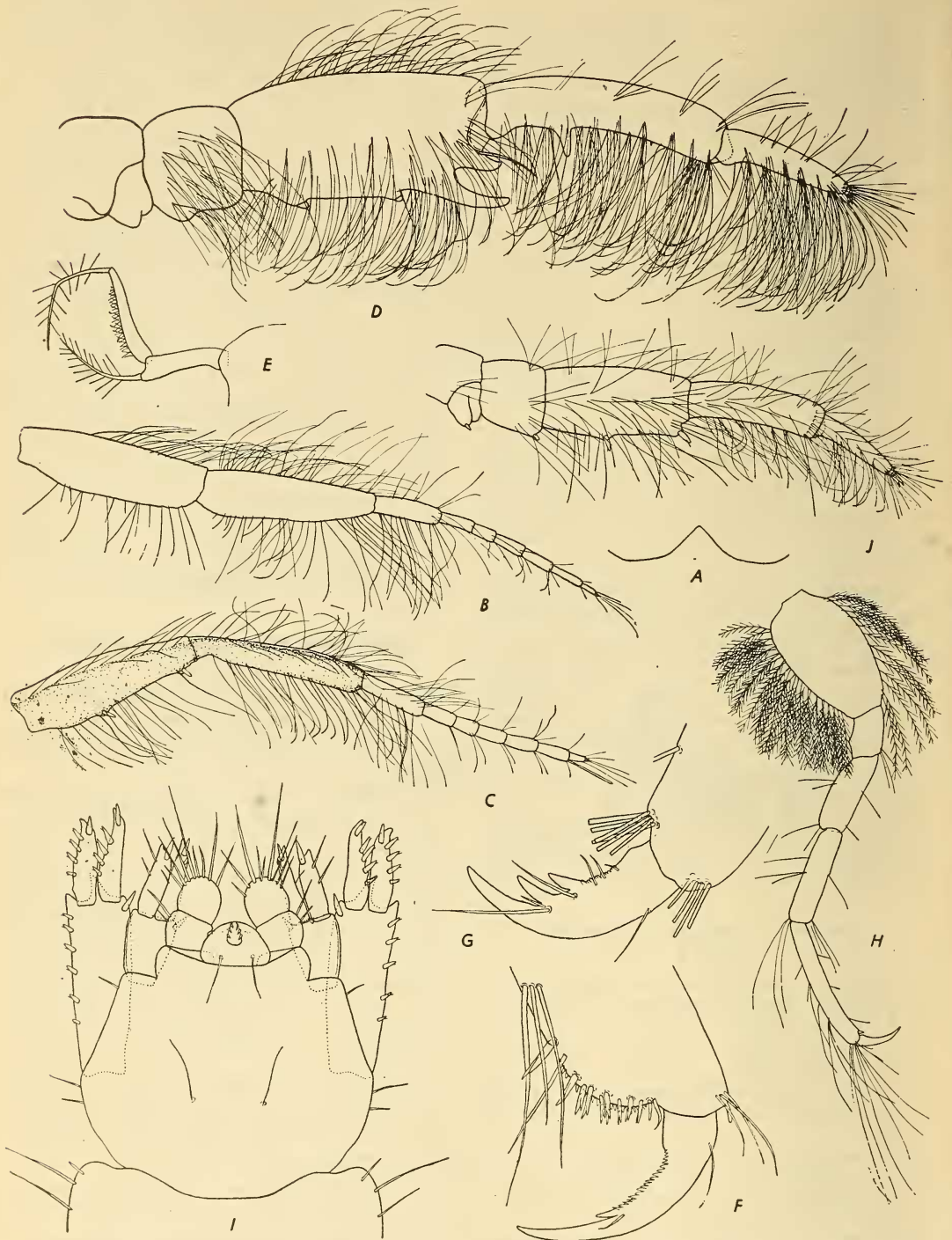


FIG. 5.—*Corophium tuberculatum* Shoemaker, male: a, rostrum, like that of female; b, antenna 1 from above; c, antenna 1, side view; d, antenna 2; e, mandibular palp; f, gnathopod 1; g, gnathopod 2; h, pereopod 5; i, urosome and appendages; female: j, antenna 2.



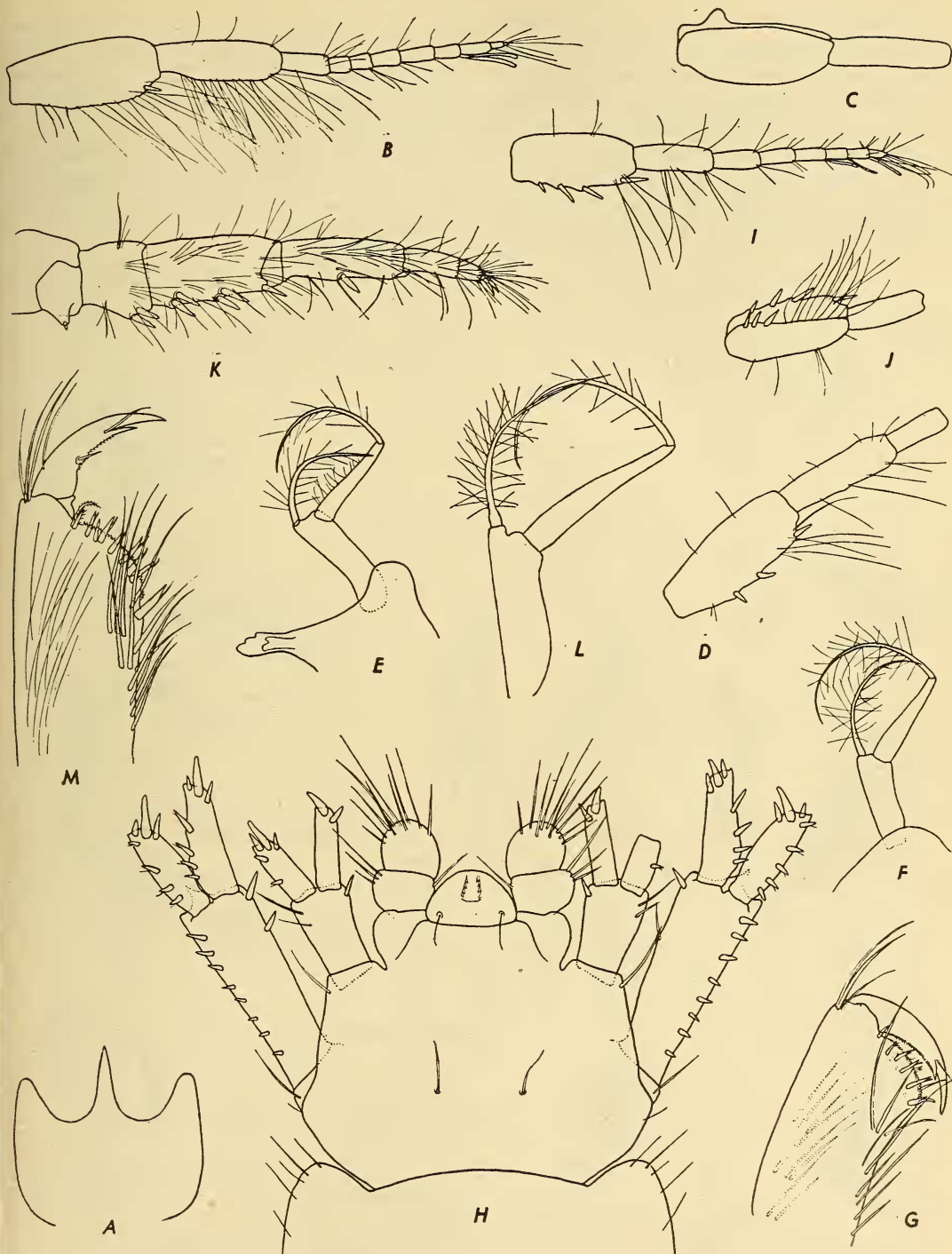


FIG. 6.—*Corophium insidiosum* Crawford, male: a, head showing rostrum and lateral lobes; b, antenna 1, side view; c, right antenna 1 from above, showing inner lobe; d, antenna 1 of young male, side view showing spines on lower margin; e, mandible; f, mandibular palp of a male from Chile; g, gnathopod 1; h, urosome and appendages; female: i, antenna 1, side view; j, antenna 1, top view showing the proximal spine of inner margin and the spines of lower margin; k, antenna 2; l, mandibular palp; m, gnathopod 1.

In reexamining the material in the National Museum, I have found this species to be present on both the east and west coasts of America. Crawford has already recorded it from Oakland, Calif. In the national collection there are specimens from Newburyport, Mass.; Amityville, Long Island, N. Y.; Oakland Estuary and Point Richmond, San Francisco Bay, Calif.; Oyster Bay, Totten Inlet, Puget Sound, Wash.;

and from an islet off the pier at Talcahuana, Chile. Crawford gives the distribution as follows: England; Denmark; Kieler Bucht, Germany; Lake of Venice, Italy; and Oakland, San Francisco Bay, California.

The female of this species closely resembles that of *C. bonellii*, but males of *C. insidiosum* are fairly common, whereas the male of *C. bonellii* is unknown.

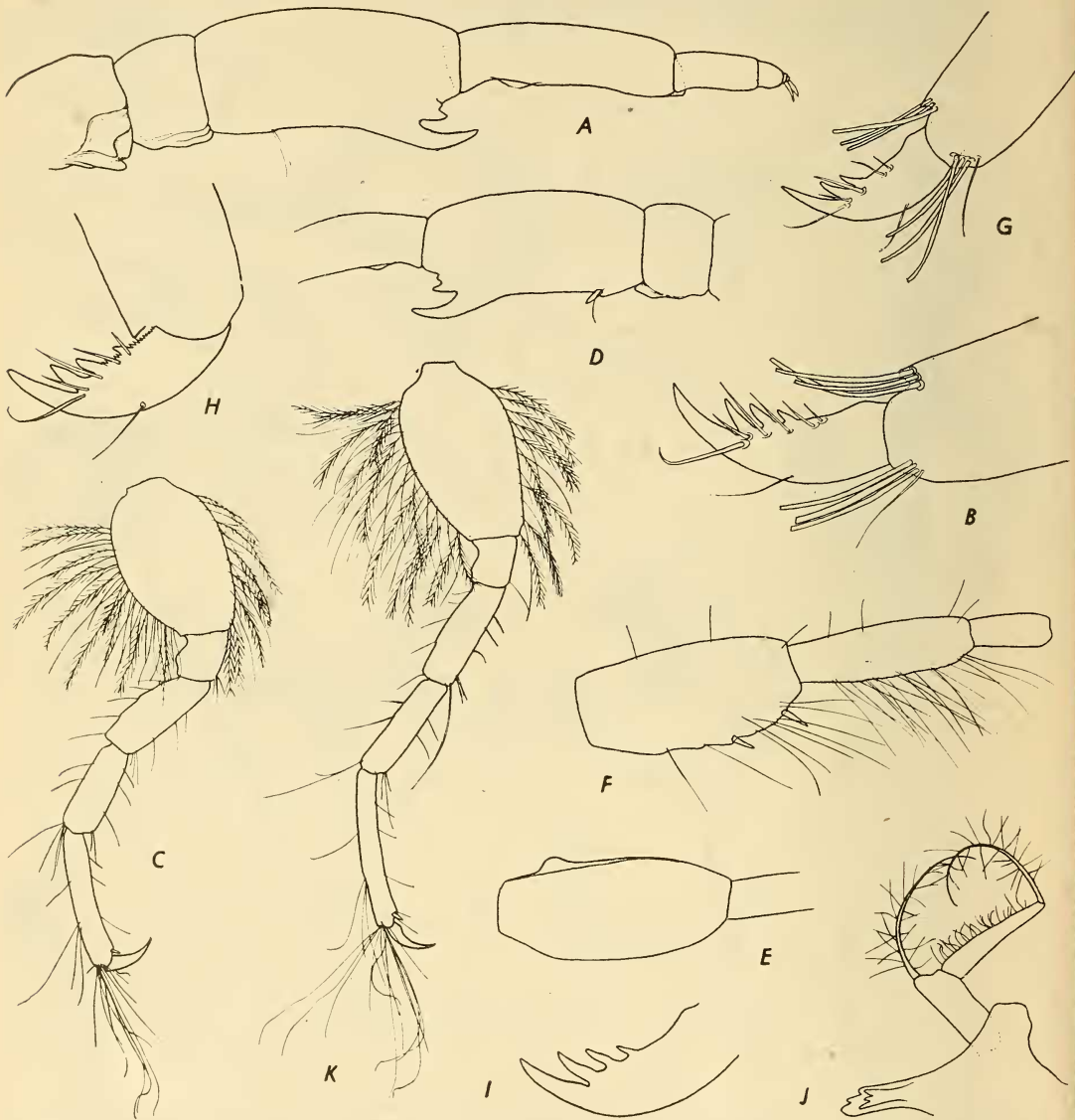


Fig. 7.—*Corophium insidiosum* Crawford, male: a, antenna 2 of mature male; b, gnathopod 2; c, peraeopod 5; d, antenna 2 of young male showing a proximal spine on lower margin of fourth joint; e, f, top and side views of antenna 1 of young male; g, gnathopod 2 of a young male; female: h, gnathopod 2; i, seventh joint of gnathopod 2 of a female from Chile; j, mandible of a female from Chile; k, peraeopod 5.

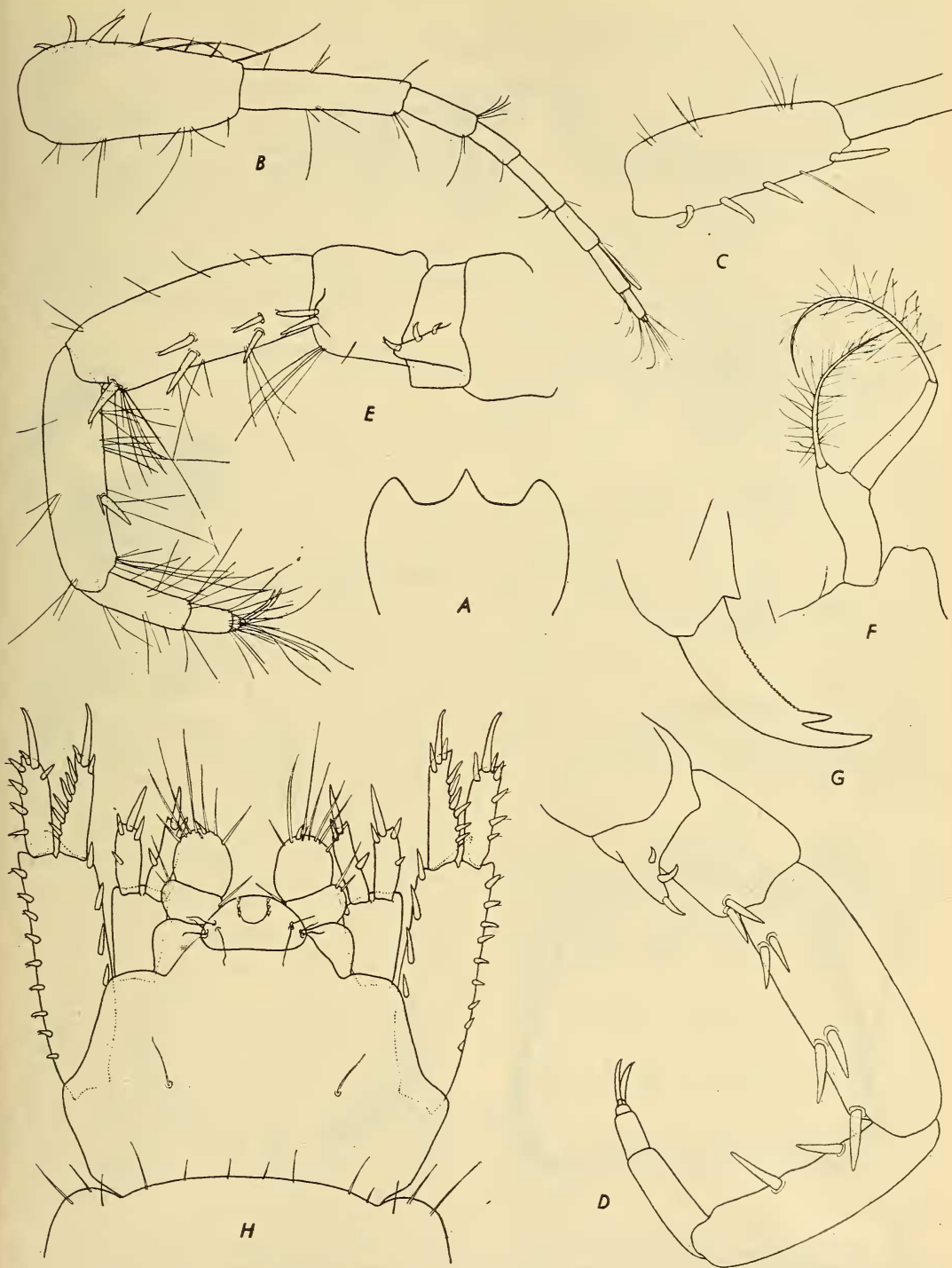


FIG. 8.—*Corophium bonellii* Sars, female: a, top of head showing rostrum and lateral lobes; b, right antenna 1, top view; c, antenna 1, side view showing spines on lower border; d, antenna 2; e, antenna 2 with only one spine on fifth joint; f, mandibular palp; g, gnathopod 2; h, urosome and appendages.

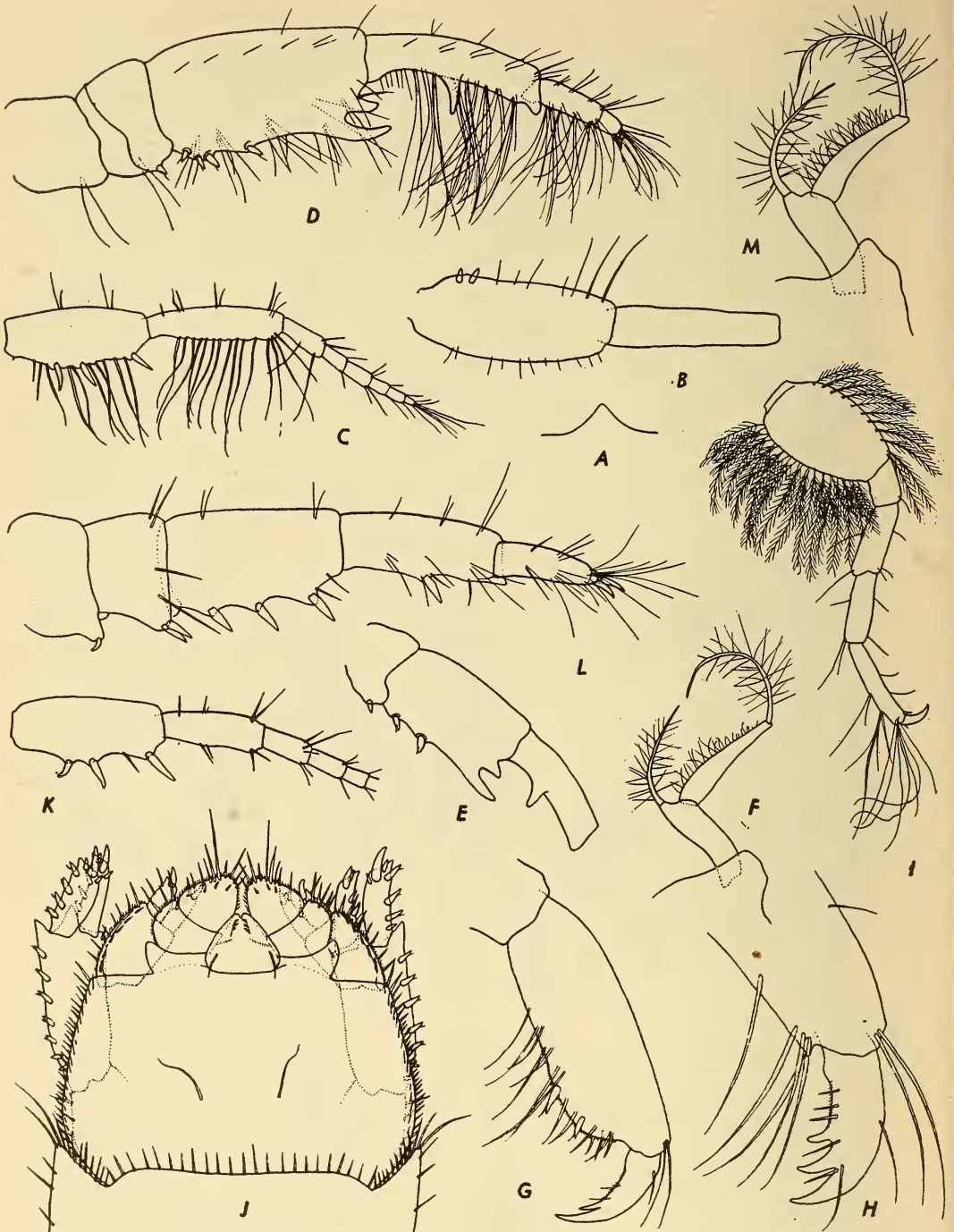


FIG. 9.—*Corophium acutum* Chevreux, male: *a*, rostrum, like that of female; *b*, right antenna 1 from above; *c*, antenna 1, side view; *d*, antenna 2; *e*, antenna 2 of young male; *f*, mandibular palp; *g*, gnathopod 1; *h*, gnathopod 2; *i*, pereopod 5; *j*, urosome and appendages; female: *k*, antenna 1, side view (the inner margin of first joint bears two proximal spines as in male); *l*, antenna 2; *m*, mandibular palp.

**Corophium ellisi** Shoemaker

*Corophium ellisi* Shoemaker, Charleston Mus. Leaflet No. 18: 3, fig. 1. 1943.

The first and up to the present time the only known specimens of this species were collected by T. K. Ellis from the stomach of a ray taken in Lemon Bay, Sarasota County, Fla. Recently M. W. Williams collected for the National Museum very fine mature specimens of both sexes of *C. ellisi* at Sarasota Bay, Fla., which record extends the range a few miles southward along the west coast of Florida.

**Corophium bonellii** (Milne-Edwards)

G. O. Sars

Fig. 8

*Corophia bonellii* H. Milne-Edwards, Ann. Sci. Nat. 20: 385. 1830.

*Corophium bonellii* H. Milne-Edwards, Hist. Nat. Crust. 3: 67. 1840.

*Corophium bonelli* Sars, Crust. Norway 1: 616, pl. 221, fig. 1. 1894.

*Corophium pseudacherusicum* Schellenberg, Further zool. results, Swedish Antarctic Exped. 1901-1903, 2 (6): 258, fig. 134. 1931.

*Corophium pseudacherusicum* Shoemaker, Proc. Biol. Soc. Washington 47: 25. 1934.

*Corophium bonelli* Crawford, Journ. Marine Biol. Assoc. 21 (2): 608, fig. 2 h-o. 1937.

The description and figures of the female specimens by G. O. Sars in 1894 have been accepted by Crawford as fixing the status of *C. bonellii*. He has examined some of the specimens used by Sars and has redescribed them and figured the diagnostic appendages. He has shown that *C. pseudacherusicum* Schellenberg is a synonym of *C. bonellii*, and has also called attention to the confusion which has existed among *C. bonellii*, *C. acherusicum*, and his new species *C. insidiosum*.

As there has never been a male among the many thousands of specimens of *C. bonellii* that have been taken, Crawford thinks it probable that the species is parthenogenetic. Parthenogenesis is of rare occurrence in the Amphipoda.

I have reexamined the material in the National Museum in the light of Crawford's diagnoses and find that both *C. bonellii* and *C. insidiosum* are well represented. *C. bonellii* appears to be rather common on the coasts of Nova Scotia and New England. Proceeding southward, there are no further records in the Museum until the Falkland Islands are reached. There are also specimens from Punta Arenas,

Chile. Crawford gives as the distribution Northern Europe; British Isles; France; Denmark; Italy; east coast of North America; Brazil (500 miles ENE. of Rio de Janeiro); Falkland Islands; and Punta Arenas, Chile.

**Corophium acutum** Chevreux

Fig. 9

*Corophium acutum* Chevreux, Bull. Soc. Zool. France 33: 75, fig. 6. 1908.

*Corophium acutum* Chevreux, Mem. Soc. Zool. France 23: 271. 1911.

*Corophium acutum* Chevreux and Fage, Faune de France, 9 Amphipodes: 366, figs. 359, 374. 1925.

*Corophium acutum* Schellenberg, Trans. Zool. Soc. London 22, pt. 5: 672. 1928.

*Corophium acutum* Shoemaker, Proc. Biol. Soc. Washington 47: 26. 1934.

*Corophium acutum* Schellenberg, Fisheries Research Directorate (Egypt). Notes and Memoirs No. 18 (The Fisheries Grounds near Alexandria. 10.—Amphipoda Benthonica): 22. 1936.

*Corophium acutum* Crawford Journ. Marine Biol. Assoc., 21 (2): 624. 1937.

*Corophium acutum* Ruffo, Ann. Mus. Civ. Storia Nat. Genova 60: 147. 1938.

*Corophium acutum* Salfi, Arch. Zool. Torino 27: 31, figs. 4-7. 1938.

*Corophium acutum* Ruffo, Boll. Inst. Ent. Univ. Bologna 11: 123. 1941.

There have been no additional records of *C. acutum* from America since the publication of my paper in 1934. It has been recorded from Woods Hole, Mass.; Lond Island Sound; Cape May, N. J.; and from the vicinity of Rio de Janeiro, Brazil. *C. acutum* appears to occur very sparingly in America, but it has a very wide distribution elsewhere, as it has been recorded from the following localities: Southern England; France; Monaco; Suez Canal; Algeria; Durban, Natal; Auckland; and New Zealand.

**Corophium lacustre** Vanhoeffen

Fig. 10

*Corophium lacustre* Vanhoeffen, Sitzungsber. Ges. Naturf. Berlin 1911, no. 9: 400, figs. 1-4. 1911.

*Corophium lacustre* Sexton, Proc. Zool. Soc. London 1912: 664, pl. 74, figs. 13-17. 1912.

*Corophium lacustre* Shoemaker, Proc. Biol. Soc. Washington 47: 27. 1934.

*Corophium lacustre* Crawford, Journ. Marine Biol. Assoc. 21 (2): 625. 1937.

Since my paper of 1934 the range of *C. lacustre* has been extended both northward and southward along the east coast of the United States. In 1934 the range extended from Ches-

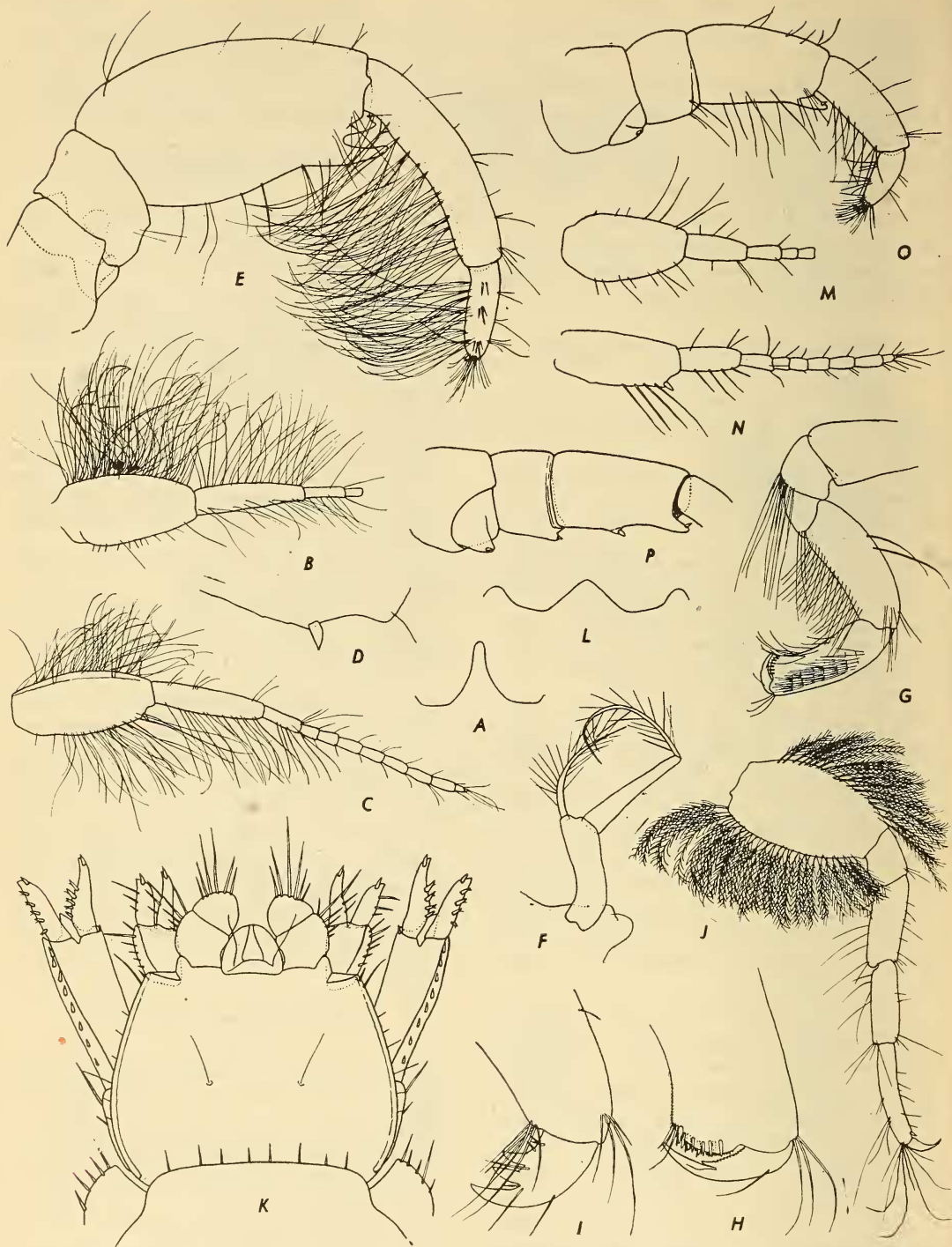


FIG. 10.—*Corophium lacustre* Vanhöffen, male: a, rostrum; b, right antenna 1 from above; c, antenna 1, side view; d, lower margin of first joint of antenna 1; e, antenna 2; f, mandibular palp; g, h, gnathopod 1; i, gnathopod 2; j, peraeopod 5; k, urosome and appendages; female: l, rostrum; m, right antenna 1 from above; n, antenna 1, side view; o, p, antenna 2.

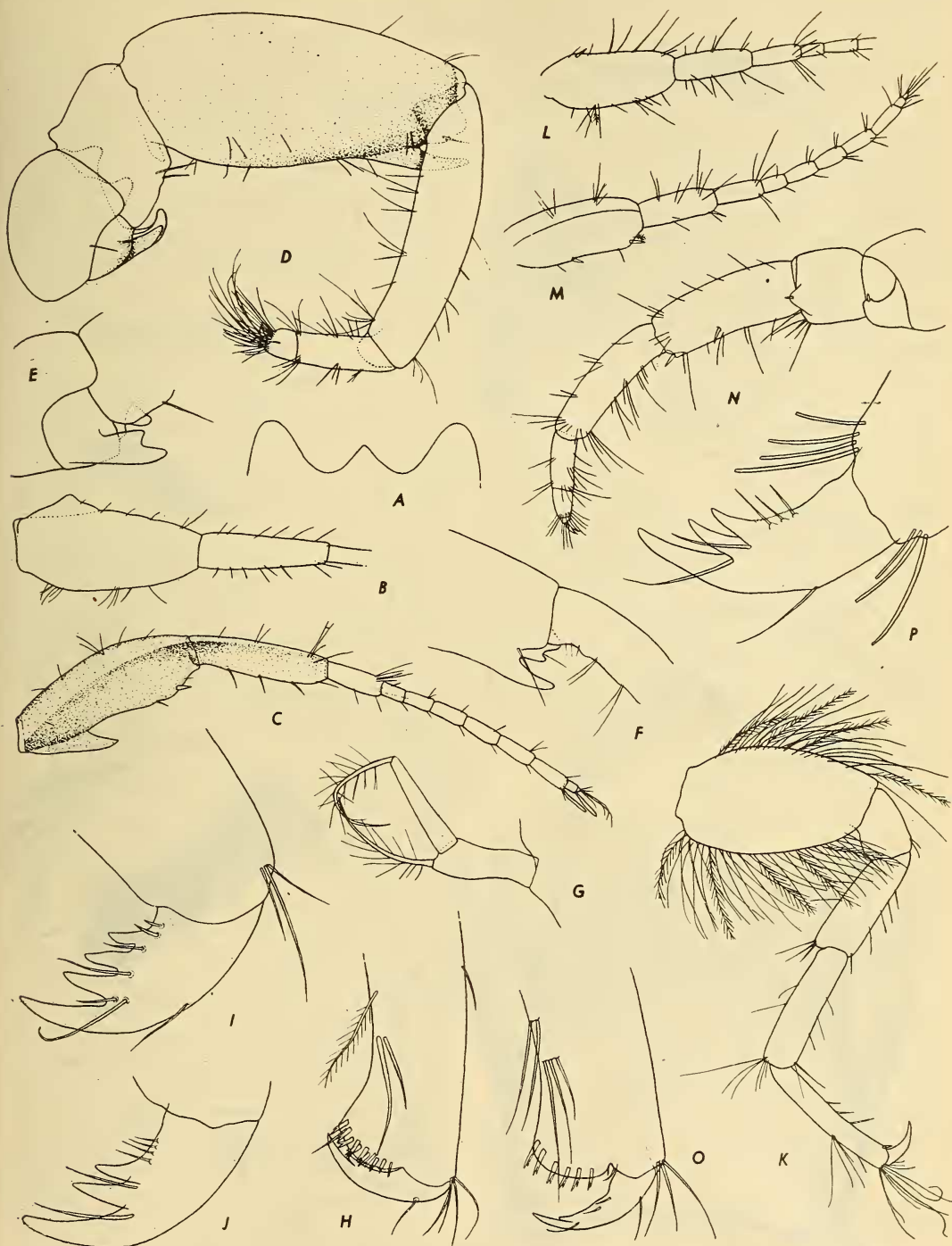


FIG. 11.—*Corophium louisianum* Shoemaker, male: a, rostrum and eye lobes; b, right antenna 1 from above; c, antenna 1, side view; d, antenna 2; e, second joint of antenna 2 showing gland-cone; f, fourth joint of antenna 2 showing small accessory distal tooth; g, mandibular palp; h, gnathopod 1; i, seventh joint of gnathopod 2 of type showing the three teeth on inner margin; j, seventh joint of gnathopod 2 showing two teeth on inner margin; k, peraeopod 5; female: l, right antenna 1 from above; m, right antenna 1, side view; n, antenna 2 showing spines on inner surface of fourth joint; o, gnathopod 1; p, seventh joint of gnathopod 2.

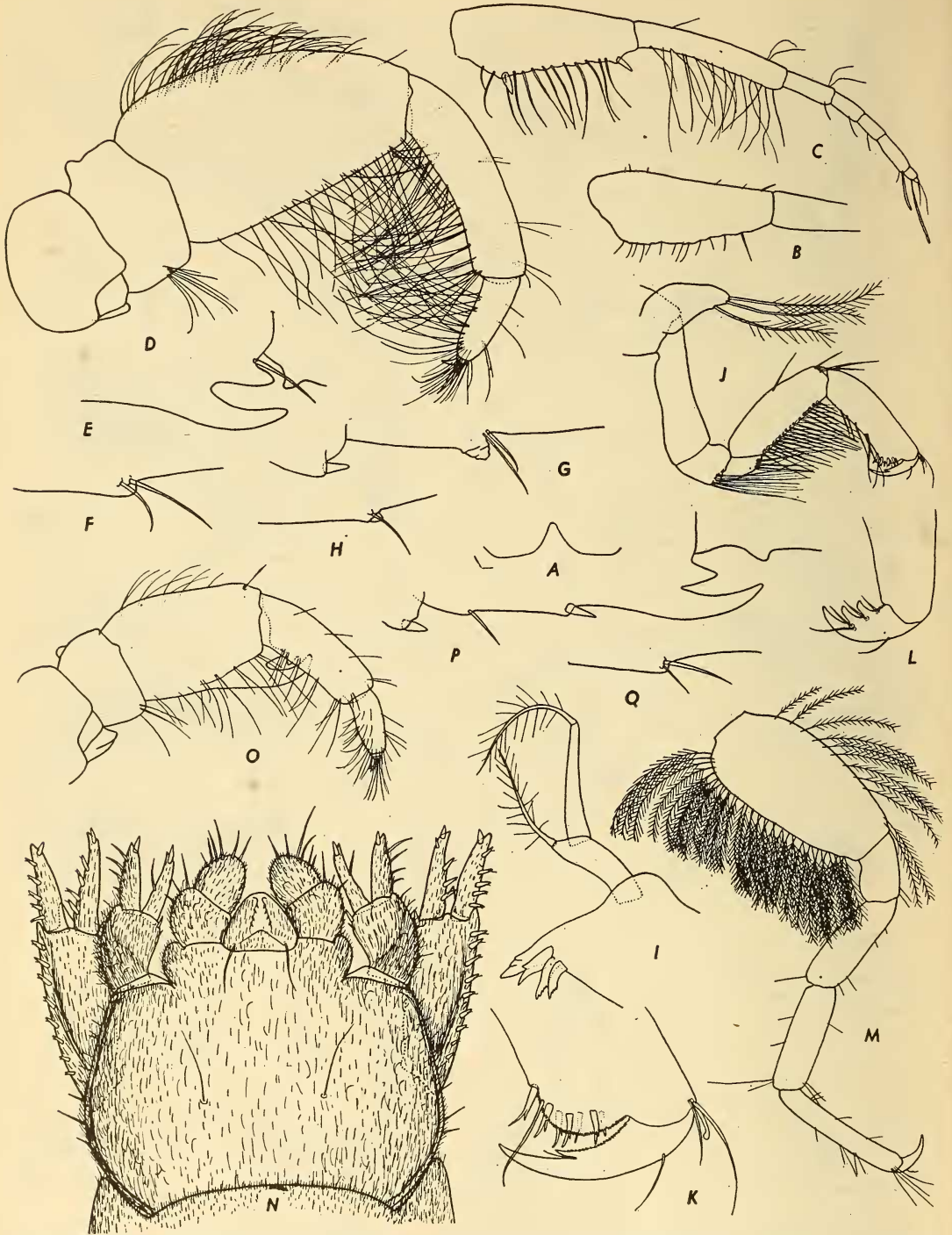


FIG. 12.—*Corophium simile* Shoemaker, male: a, rostrum; b, right antenna 1 from above; c, antenna 1, side view; d, antenna 2; e, antenna 2, specimen from May River, S. C.; f, g, h, tubercle on lower margin of fourth joint of antenna 2 of three different specimens; i, mandible; j, k, gnathopod 1; l, gnathopod 2; m, pereopod 5; n, urosome and appendages; female: o, antenna 2; p, antenna 2 showing spine on lower margin of fourth joint of female from Vineyard Sound, Mass.; q, proximal tubercle on lower margin of fourth joint of a specimen from New Haven Harbor, Conn.



peake Bay to Winyah Bay, S. C. The National Museum has since received specimens from Haverstraw on the Hudson River, N. Y. (taken by H. K. Townes); Fort Raleigh, Roanoke Island, N. C.; Cooper River and Alligator Creek, S. C.; and Welaka, Fla. (taken by the U. S. Bureau of Fisheries). In Europe this species has been recorded from the coasts of Germany, Finland, Holland, France, and England.

*C. lacustre* extends up the rivers of the east coast of the United States into waters that are very nearly fresh.

#### *Corophium louisianum* Shoemaker

Fig. 11

*Corophium louisianum* Shoemaker, Proc. Biol. Soc. Washington 47: 30. 1934.

*Corophium louisianum* Crawford, Journ. Marine Biol. Assoc. 21 (2): 626. 1937.

When this species was described in 1934 there were only two known specimens, both males, one from Chef Menteur, La., and one from Biloxi, Miss. During the summer of 1944 M. W. Williams obtained for the National Museum mature specimens of both sexes at Biloxi, Miss., and at Sarasota Bay, Fla. *C. louisianum* is a tube-building species.

In describing the second antenna of the male (1934, p. 30), I said, "Fourth joint large and powerful, lower distal corner produced into a strong, slightly curved tooth, above which on the inside of the joint is a prominent distal lobe bearing a notch and setule." While this description is correct for the type specimen, most of the fully developed males possess a small tooth below this notch, as shown by Fig. 11, *f*. I also stated in the original description that pleon segments 4-6 were coalesced with their united lateral margins raised into a ridge above the dorsal surface. I should have said that the united lateral margins of the fourth and fifth segments are raised into a ridge above the dorsal surface. This ridge is very prominent in both sexes and does not show any interruption between the fourth and fifth segments. This correction also applies to pleon segments 4-6 of

*Corophium simile*, which I described in the same paper.

The inner margin of the seventh joint of gnathopod 2 of the male bears two teeth, but occasionally there are three.

The female resembles the male except in the antennae. In the female the first joint of antenna 1 does not possess the protuberance on the upper inner margin or the forward-pointing tooth on the lower margin, but has only one proximal spine on inner margin and two small forward-pointing spines on the lower margin. In antenna 2 the second joint is produced below into a curved lobe bearing a small spine; the third joint bears a short anterior lobe armed with a short spine; the fourth joint bears on the lower margin a distal spine and another spine a little forward of the center; the fifth joint is without spines. The palm of gnathopod 1 is convex and passes by an evenly rounding curve into the hind margin of the joint, and it is armed on the outside and inside by a row of notched spines; the seventh joint bears distally on the inner margin a single forward-pointing tooth. In gnathopod 2 the seventh joint is armed on the inner margin with 2 teeth. Female measures from apex of rostrum to end of uropods from 4 to 4.5 mm.

#### *Corophium simile* Shoemaker

Fig. 12

*Corophium simile* Shoemaker, Proc. Biol. Soc. Washington 47: 28. 1934.

*Corophium simile* Crawford, Journ. Marine Biol. Assoc. 21 (2): 626. 1937.

In 1934 the range of *C. simile* was given as extending from Vineyard Sound, Mass., to South Carolina. Since then specimens have been taken at Lemon Bay, Fla., by Olga Hartman; at Sarasota Bay, Fla., by M. W. Williams; and at Apalachicola Bay, Fla., by A. S. Pearse. Though this species has a rather wide distribution, it appears to occur in very sparing numbers. It has not been recorded except from the east coast of the United States.